Inaugural Essay
on
Delirium Tremens
by
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" O! that men should put an enemy in their mouth to steal away their brains!."

Shak.

The subject of the present Thesis has been recognized and treated by medical writers under the various and vague appellations of delirium tremens, mania a potu, mania temulentia, brain fever and others. Instead of enumerating the objections to the above appellations, by a consideration of the vagueness and inapplicability of such terms, I shall without reference to the claims of priority or authority adopt that term which appears to me the most unexceptionable.

That the matter of these pages may be duly appreciated, it is proper that I should premise by stating that it is the result of personal observation made during a residence of one year in the medical department of the Philadelphia Alms House Infirmary. Whatever diversity of sentiment may exist among those who have directed their attention to the "modus operandi" of the cause in the production of delirium tremens, they may be considered as unanimous in the opinion that it is produced

by the "sudden cessation of the habitual and immoderate use of stimulo-narcotic substances"

It is a law in the animal economy, that as the constitution becomes habituated to any stimulus the effect of that stimulus decreases — to preserve and continue the effect originally produced by excess of stimulus, it is necessary to increase the quantity of it if the system shall have been influenced for a long period of time by the frequent and increasing quantity of stimulus and this stimulus be abruptly withdrawn or suspended, the system sinks to a degree more or less below that which would otherwise constitute a state of health.

There is another law not less general nor familiar viz: that the system possesses an inherent power variously denominated vis medicatrix, vis vitæ &c, and it is equally certain that when inroads are made upon the natural and healthy organs by stimuli or other causes, this power or by whatever name it may be called is exerted to a

certain extent to control and accommodate the system to these morbid impressions. To this law or power of the system is generally attached an independent and rational agency — what I understand by it, is merely a disposition in the constitution to recover from disease and in its operations harmonizing with the general laws of the animal economy

In the illustration of these laws and their application to a diseased state of the system, the effects of an habitual and immoderate use of ardent spirits may be cited.

If we administer to a stomach unaccustomed to the alcoholic impression a certain quantity of this liquid, the first effect produced is that of a diffusible stimulant as evinced by a general and preternatural excitement of the organs and functions generally and of some more particularly: from the close and ready sympathy existing between the stomach and brain in a healthy state, the functions of this latter organ are especially stim=

ulated and subsequently depressed or impaired. In consequence of the excitability or susceptibility of impression becoming obtunded, it is necessary to increase the quantity of ardent spirits to produce an effect equal to the original one: the system thus alternately suffering from these opposite impressions calls forth all its recuperatory and accommodating powers to sustain itself even in an approach to health — If in this condition of health, the stimulus be suddenly abstracted, the cerebral and nervous system will be thrown into an irregular and excited action, because if I may so speak, it has been deprived of its artificial regulating influence: and cæteris paribus, proportionably as the system has been dependent on this power, will be the severity experienced. The precise manner in which the nervous system is affected and its functions varied in this disease is not fully understood, nor can we expect to pronounce positively and definitely on the pathology of many of its diseases

untill its anatomy and physiology are more thoroughly investigated. However paradoxical it may seem, it follows, that this disease is produced by the absence of the remote cause or in other words, that the immoderate and habitual use of ardent spirits is the remote cause and its sudden cessation or discontinuance the immediate or proximate cause.

If a patient has immoderately indulged for a greater or less period of time in the use of spirituous liquors and particularly if in addition to his usual quantum he has partaken more freely of this poison a few days previous to its cessation or intermission, a train of symptoms will be developed which I will endeavour to present in the order in which they have most frequently occurred to my notice.

After the exhilarating and immediate depressing effects of the stimulus have passed off, the patient complains of want of appetite, nausea, sick-head-ach: his accustomed draught

is solicited, thirst for water is extreme, the counte=
nance is anxious, tongue is slightly furred, its
circulation is active whilst that of the skin is
generally languid, the bowels are costive or oc=
casionally laxative. Although most of these
symptoms generally precede those having a more
direct bearing on the disease, I have viewed them
as consequent on "hard drinking" rather than
symptoms of Delirium Tremens; at least
I have seen all these appearances in drunk=
ards who have never experienced the disease=
and I am equally sure that I have seen a few
cases in which they have all been comparatively
absent. The patient now retires to bed, but is
restless and cannot sleep; if he dozes it is
only for a short time, he suddenly starts from
his pillow with a choking sensation or is roused
by some appalling dream; tremors of the mus=
cles of the tongue neck and hand now become
visible, these afterwards become general=

This state of the nerves although not a uniform attendant on the disease forms in a very large majority of cases one of its diagnostic characters. To these symptoms succeed strange sensations, groundless fears, great restlessness and constant watchfulness — these things continuing a day or more according to the particular circumstances of the case, a delirium of a peculiar character now ensues. The patient fancies a thousand imaginary evils; he is in incessant motion, throws his bed-clothes about him, picks at imaginary things, converses with ideal personages; he will call on the attendant to protect him from the machinations of individuals who are besetting his life — Satan and his followers are not unfrequently the heroes of his vision: if not confined he will walk wildly about his room, dress himself and demand his freedom, stating the necessity of his personal attendance to his affairs.

These hallucinations are almost uniformly of an unpleasant character to the patient; in one instance only have I seen an exemption in this respect.

With this disorder of the cerebral functions, other changes take place or previous symptoms become aggravated. The head is preternaturally hot, the eyes are more wild, the skin is sometimes natural or bathed in a profuse perspiration – the pulse is full, compressible and somewhat accellerated – the tongue varies in its appearance; in violent cases I have seen it of a brush aspect, occasionally dry and cracked – in a few instances it has continued moist and natural, the breath is generally offensive – the stomach in general, will receive its ingesta, at other times it is irritable and repulsive. If there coexist with the delirium an acute inflammation of the pleura or any other tissue, the patient for the most part

insists on his freedom from pain: sometimes he manifests paroxysms of astonishing strength, these however are of short duration and are followed by a correspondent state of muscular debility. If the disease is not arrested, symptoms of congestion supervene which often terminate in serous effusion &c and finally in death.

Treatment. Various modes of treatment have been adopted and recommended by different authors according to the respective views they have entertained in regard to its pathology. It is not my intention, to enter into a consideration of the merits or demerits of the reasonings and arguments which have been adduced by theorists to support their peculiar views. There is however a pathological doctrine which has been advanced by Professor Joseph Frank and adopted by Dr Speranza and others which I believe to be erroneous

and calculated to do essential harm, in as much as its determinators are individuals who sustain distinguished reputations in their profession. They consider the disease to be an absolute phrenitis or encephalitis and advocate an antiphlogistic treatment to the exclusion of opiates. — A consideration of an opposite mode of treatment as detailed in the appended cases and the appearances which post mortem dissections have revealed will I trust without reference to other evidence prove such a theory false and fraught with evil tendencies.

Formerly the emetic treatment founded on a gastric pathology as taught by Dr Klapp of this city, was universally adopted in the Alms House Infirmary. This practice has been superseded by that, which may be considered the most popular and which is at present taught by Professor Chapman of the University of Pennsylv

with a view to the treatment, I will endeavour to present in general terms the indications to be fulfilled and the most successful means of attaining them as practiced in the Alms: House. The minutia of the treatment and the occasional complication of the disease with a correspondent modification in the cure will be seen in the cases referred to.

The means and remedies employed may be said to be in subservience to the accomplishment of two general indications.
1st To prepare the system for the reception of those remedies calculated to induce sleep.
2nd The administration of those means most speedily effectual in its production.
Purgatives. In mild cases it was usual to administer a gentle purge to open the bowels and prepare the stomach for the reception of opiates. Senna and a neutral salt was very common — a purge of calomel with one grain

of Opium followed by half an ounce of oil was not unusual, when the liver was torpid and the secretions generally deficient.
In some violent cases it was deemed generally preferable to administer an enema, that no time should be lost before the exhibition of Opiates. Rhubarb will be found peculiarly appropriate in this disease, as its operation on the bowels is but slightly influenced by narcotic articles. During convalescence, the costive disposition should be guarded against by mild laxatives and enemata.
Cold affusion. During the term of my juniorship, my senior in office frequently subjected those cases of violent delirium (when not contra-indicated) to the operation of the cold shower bath, with the effect of reducing the temperature of the head and rendering the delirium less violent. I have thought that Opiates administered after this operation acted more

efficiently. In the winter season for obvious reasons the bath was not used – cold wet cloths applied to the head and an occasional hot pedeluvium proved an excellent substitute.

Blisters. a blister applied to the nape of the neck or sinapisms to the extremities by diverting the circulation of the blood from the brain proved of essential service. A blister or mustard plaster was occasionally applied over the epigastrium to compose an irritable stomach or to awaken its sensibility to the operation of internal remedies. In the congestive stage or after serous effusion had supervened, this class of remedies was invariably had recourse to.

Blood-letting. Of venesection I wish to speak more particularly. Bleeding was seldom practiced in this disease unless there was unequivocal evidence of an approaching apoplexy, congestion or inflammatory complication; under these circumstances it was looked upon rather

as a choice between two evils. The abstraction of a few ounces of blood by cups was generally preferred to depletion from the arm — these were usually applied to the back of the neck in preference to the scalp, as convulsions or other unpleasant symptoms were in more than one istance, consequent on their application to the latter: they seemed to act on the principle of ligatures especially when the skin was not fully scarified.

They who would advocate venesection under the idea that the disease is phrenitis will find something in the history of the following case to wonder at or discredit.

There is at present residing in the Alms House a man of a robust frame by the name of Charles Pancoast, who has been the subject of nineteen successive attacks of Delirium Tremens — in two attacks only was he bled and in these as in all the others was he

treated by opiates – If his brain had been the seat of inflammation during each paroxysm, he is at least a living evidence of the antiphlogistic powers of narcotics generally and opium particularly.

It has been a subject of controversy whether "bleeding in patients predisposed to this complaint produced or increased it." I have seen a patient, who to use a vulgarism has been "bled into" a paroxysm of this disease, whose energies (if not bled) would probably have fortified the system against the attack – The evidence derived from an "a priori" consideration of the nature of this affection favours this opinion. Does not an approach or approximation to this disease arise from a cause that debilitates the system? Is not the power of the circulatory fluid very great in maintaining the vis medicatrix to oppose the further morbid effects of this debilitating cause? If then, a portion of this fluid be abstracted from the system, this renovating power becomes more

impaired; the equilibrium is destroyed, the morbid tendency prevails and the phenomena of Delir: Tremens result. Aware of this fact the students of the House used the lancet with much caution towards such patients as were intemperate and recently admitted.

I come now to the consideration of that class of remedies which should be administered to meet the second and most important indication, the successful effect of which has been termed a "sine qua non" in its cure.

Opium. The state of powder was the most common form in which this drug was administered. The amount of opium necessary to ensure success varies so much in different individuals, that no specific rule can be laid down. The only rule by which we are to be guided, is to exhibit the narcotic at short intervals, untill a disposition to sleep is manifested or untill symptoms of congestion apoplexy or other

contra-indicating effects or appearances arise, when its use should be suspended or discontinued and recourse had to other measures. It was usual to direct 3, 4 or even 6 grains every hour or two according to the violence of the disease and habits of the patient. After two or three doses have been taken, it is all important that the attendant or physician should carefully watch the patient to observe the effects of the succeeding doses.

When the tongue or skin is dry opium combined with a small portion of the blue mass or calomel, by stimulating these secretory surfaces will dispose the system to be more readily acted upon by the narcotic. A few drops of the Spt. Terebinthina administered simultaneously with the narcotic will in some insensible states of the stomach prove decidedly serviceable by arousing its irritability to the narcotic action.

In some instances when from obstinate vomiting or insensibility of that viscus the opiate

impression can not be thus communicated to the system, the opium or some one of its preparations may be exhibited in the form of an enema, thus directed the narcotic effect will sometimes be happily exercised.

After a sound and refreshing sleep of six or twelve hours has been obtained according to my observation the patient has uniformly awakened with his mind perfectly sane or very slightly confused. Towards evening, there is a tendency to a recurrence of the delirium; this should be guarded against by the exhibition of 2, 3 or more grains of opium at bed-time.

The acetum and tinct opii were sometimes administered mixed with the drinks of the patients — the facility with which they may be deceived in this respect and the less liability of the former to offend the stomach and distress the head are advantages which under some circumstances it may possess over

the powered opium. Dr. Coates who advocates in strong terms the opiate practice states in his excellent treatise on this disease, that he has "never seen, read of, or heard of, an instance in which it (opium) was productive of any harm"

It may not be improper to remark that from inattention to the rules for administering this remedy, from the latent accumulation of its effects in the system and its sudden development or from some other cause, two or three patients were brought into imminent danger as manifested by all the symptoms consequent on an overdose of this drug.

— C, an agent in the alms house was attacked with Delir: Tremens; his delirium proving very violent, 20 drops of black-drop was exhibited every hour — This treatment was adhered to for 3 days in succession, when stupor ensued; his respiration now became stertorous, face livid, capillary circulation al=

most suspended: the narcotic was immediately discontinued and recourse had to blankets dipped in hot water and applied to the surface; hot bricks, sinapisms, blisters, stimulating enemata were also used, and in less than an hour, nature so far responded to our efforts as to enable the patient to walk about and what was most remarkable, his delirium had almost left him.

Assafœtida, Camphor, Humulus Lup &c.

All these articles were more or less employed in combination with Opium or its preparations, but I am not aware that the anodyne effect was improved: in this remark perhaps the camphor should not be included, as I have seen it in some exhausted states of the system co-operating with Opium display very desirable effects.

Stimulants and Tonics. In violent vomiting I have seen a dessert-spoonful of brandy or whiskey

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given at short intervals compose the stomach after all the usual remedies had failed.

When the system is much reduced, delirium violent, skin and tongue moist, pulse weak and soft and especially if the patient eagerly solicits spirituous drinks; brandy or some other species of alcohol may be taken in some instances to a very great extent, with the effect of sustaining the vital powers and co-operating with opiates in the production of sleep — In a majority of cases Porter was freely drank by the patients to the exclusion of ardent spirits.

The diet should be of a nourishing kind; care is to be observed however that we do not overload the stomach, especially when there is a tendency to congestion in the brain. — Chicken soup moderately spiced or the essence of beef and the farinaceous articles may constitute the diet. Coffee is very grateful to the patient and from its invigorating powers answers well. During con=

valescence in addition to the above, Sulph. of Quinine, Carb: ammon, capsicum, Valerian Columbo and Ginger tea are invaluable tonics in restoring the digestive apparatus and imparting strength to the general system.

The order observed in the following cases have a reference to their degree of severity and manner of termination; in this way, the character and management of the disease will be best illustrated.

Oat Davis. admitted June 13th 1829.

Symptoms on admission. Has general tremors, mind irrational, very restless, determination of blood to head producing pain, skin dry and hot, feet cold, eyes injected, pulse frequent and hard, bowels costive. Directed Senna tea, cups to back of head, followed by cold applications.— hot pediluvium.

Evening Found his head relieved by the cups, skin moist, tongue natural — Directed acet opii gutt I.

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14th Reposed some last night, which has diminished his tremors and delirium. Directed small doses of acet Opii during the day and xxx drops at night. Porter for drink.

15th Slept all night and is now quite sane.

Colonel John Pluck. admitted Jany 13th 1827.

Symptoms. Face flushed, head hot, skin warm and dry, pulse accellerated, tongue foul, has some tremors and is flighty at intervals. Directed cups to back of neck and a purge of Senna and Manna.

14th has quite irrational all night and is now very talkative and restless – his mind is turned on the subject of tactics, has less flush of face, discharges very dark and offensive, pulse full tremors abated, pupils somewhat contracted.

Directed ℞ Pulv G Aspafatid ℥iss
Tinct Opii ℥iij
Aq: Menth ℥j } ℥ss every hour

Evening – Delirium continues, skin nearly perspirable

Directed Pulv: Opii gr V q.t.h.

15th After taking 3 powders sleep ensued which lasted for 3 hours when he was accidentally awakened – seems

drowsy and inclined to sleep again. Directed Opium gr V.
Evening. Has been asleep nearly all day and is now rational.

Robt Peacock at 28 admitted March 15th

This patient has been the frequent subject of Delir: Tremens his attacks have been remarkable for their severity and duration: in one paroxysm his reason was not restored under six weeks.

Symptoms. Has all the signs that characterize the disease, is in constant agitation, annoyed by "black devils and cats" that are gamboling about his room. – Bowels opened by an enema last night, tongue moist and coated with a light brown fur. Directed Pulv Opii gr IV. q.h.s. Porter for drink.

Evening. Has taken 5 powders, mind is more composed, looks drowsy. Directed the common enema of the House – a large opiate to be immediately given.

7th This morning, found him in a refreshing sleep and did not disturb him. P.M. He awoke at noon quite rational. Directed an opiate at night.

Andrew Anderson. at 25. admitted March 8th 1828.
Symptoms. Is restless, has no delirium, says he is troubled with disagreable dreams, perspires profusely. Pulse is soft and full, tongue nearly natural.
Directed. Porter for drink – one grain of Opium q.h.
Evening. After taking 4 grs he slept some, but awoke with confirmed delirium, he passed his urine for the first time since yesterday morning. Perspiration continues to be profuse. Directed. Opii pulv gr iij q.h.
Enema of Senna and Manna.
9th Slept a little after taking 9 grs. pulse is soft and calm after the bowels were opened the perspiration diminished.
Directed. Opii pulv gr iv. q.h. – Porter to drink
10th Took 3 powders and dozed at intervals – delirium continues, conceits that he will shortly die, but is somewhat reconciled to his fate, complains of headach. Directed Opii gr iv q.h.
11th Was informed by the nurse that he slept about 4 hours after he had taking 12 grs. – When he awoke his mind was less fanciful. Directed Ol. Ricini

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the opium to be renewed after its operation.

Evening. On entering the room I found him in an attitude expressive of great terror, holding himself against the wall under the idea that it was about to crush him. Directed Opium gr V.

12th was informed that he took 4 powders; sleep now supervened which lasted 8 hours — He is now rational and complains of soreness of his muscles. Discharged on the following day.

Sarah Ross. æt 32. Full habit of body.

This patient was admitted in a clinical ward Feby 6th with well marked symptoms of Hæmatemesis. She had several convulsions before and after admission: her pulse being full I directed her to be cupped.

7th Dr Jackson saw her and directed 4 cups to the head. magnesia and Rhubarb to open bowels. Mustard plaster to epigastrium.

℞ Sacch Saturni gr 1/2
Conserv Rosar q.s. M ft pil. q.h.

Directed an opiate enema. Gum arabic lemonade for diet. In the evening I found her with all the

symptoms of Delir: tremens and directed her removal to the cells.

4th Symptoms. Pulse frequent (115) but soft, surface cold, sweats profusely, tongue clean, purplish and rather dry – it was necessary to chain her.

Directed Pulv: Opii gr iij q.h.s

night. She is now bathed in a profuse perspiration, tongue moist, pupils contracted, pulse about 120, soft but not feeble. She is incessantly picking at the floor and wall as if there was small objects before her, so natural was her motions that one of the young men present actually thought she was picking up long hairs and turning them around her finger. She is in good humour and is not troubled by disagreable visions.

5th Slept nearly all night – and is perfectly rational this morning – skin almost natural – complains of head-ach, is hoarse but says her throat is not sore – took yesterday 18 grs of opium. Has conside-rable tenderness of epigastrium.

Ordered ℞ Magnes Sulph ℥j
℥ Rhei comp ℥ij ℥ss p.r.n.
Aq: menth ℥ij
Sacch alb ℥ij
M

Midnight says she does not feel well and is inclined to sleep. ℞ Pulv: Opii gr IV

10th Continues rational, pulse, skin and tongue in good order – has some head-ach – allowed Porter.
She was returned to the clinical ward and shortly afterwards discharged apparently cured of her gastric affection.

— Deuly at 37 admitted Nov: 3rd. Of full habit and sanguine temperament.
Symptoms. Eyes red and injected, skin cool, determination of blood to head productive of pain, incoherency of speech, centre of tongue covered with a bluish fur, edges white and moist, solicits gin.
Directed head to be shaved, cups to back of neck, hot pedelivium, oat meal gruel for diet.
4th Head relieved, no change in other respects. Porter for drink. Evening: Disposition to stupor, bowels bound. Directed a purge of Calomel & Jalap. ℞ Opii gutt XI.

4th The discharge brought away by the purge was of a dark colour, pulse small and languid, capillary circulation also languid, pupils contracted, has more stupor, her arms will rest in any position in which they are placed. Thirst great no appetite

Directed camphor mixture, sinapisms to extremities, brandy toddy. Dr. Hodge now saw her, approved of the treatment and ordered in addition, her head to be shaved and blistered, a stimulating enema was also administered. P.M. Stupor increasing, face more flushed and livid, pupils contracted to the size of a pin's head, respiration heaving, pulse improved. Evening. Is almost rational, owing probably to the vessels relieving themselves by effusion, respiration irregular.

Directed stimulating frictions, carbonate of ammonia, hot bricks &c &c. Died at evening.

Autopsis. Stomach of a light-pink colour, mucous coat natural as to thickness. Liver enlarged. Brain. On cutting through the scalp, its vessels

were found very much congested, the vessels of the pia mater injected with dark venous blood – on the surface and at the ~~brain~~ base of the brain there was a little effusion – The fifth ventricle was found greatly distended with pure serum – the other ventricles were found to contain more or less of the same fluid, the vessels were also congested.

Ellen Mooney. at 30. of full habit admitted Nov: 22nd – has been very intemperate for the last six months.

Symptoms. This patient had several convulsions before her admission; for which she had been bled. Face pale, head rather warm, eyes natural, capillary circulation languid, feet cold, pulse not perceptible, respiration hurried, speech indistinct and incoherent.

Directed frictions of Spts Terebinthina and enema of the same combined with mucilage, flying sinapisms, whiskey to be freely drank.

Evening. Is somewhat improved, pulse well de=

veloped, skin warm, no other change.

23. Slept some during night but is not refreshed by it, has tremors of her hands, eyes injected, is more talkative, cries and laughs alternately.

P.M. 3 o'clock. Is very restless, throws of her bed-clothes talks wildly, tongue swollen.

Directed Lac assafetida, external stimuli &c.

In the evening an enema was administered.

Acetate of Morphia gr 1/6 every hour. She died early next morning.

Autopsis. Stomach very much contracted, patches of inflammation at its large extremity, in other respects natural. Liver large and florid.

Gall-bladder large and filled with healthy bile. Some bile was found in the stomach. Intestines filled with gas, spleen natural. Brain. Watery effusion was found between the scalp and pericranium, the vessels of the dura mater contained but little blood. Pia mater much injected, some serum was found in the ventricles

and at the base of the brain, its substance was natural.

General Remarks. Fat persons with short necks and large heads are more difficult of management than those of an opposite organization; there is a greater disposition to congestion in such cases — hence we can seldom err by an early resort to revulsive measures.

This disease will sometimes develope itself during an attack of fever and if not recognized, may be mistaken for acute phrenitis and accordingly treated.

The prognosis is unfavorable when there is injection of the eyes and contraction of their pupils — under these circumstances, opium should be administered with the greatest caution.

The state of the capillary circulation should be constantly kept in view and is more to be depended upon than the general circulation: when the former is natural and the latter not very

active, narcotics may be administered with safety.

Convulsions I have rarely seen and I have reason to believe that they were of more frequent occurrence when the emetic treatment was in vogue. — Relapses in this disease are more mild than the original attack.

Dr. Ashmead, who availed himself (during a residence of two years in the alms House Infirmary) of every opportunity to examine the brain in this disease, informs me, that according to the result of his observation, the congestion and effusion of the brain were in an inverse proportion; that he occasionally found an opacity of the arachnoid membrane especially at the base of the brain indicative of chronic inflammation: he further states that he has never witnessed an acute phlogosis of that organ, in patients who have died of this disease.